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The path dependence and adjustment strategy of the pricing power of dominant mineral resources: based on the perspective of law and economics

Introduction

The pricing power of advantageous mineral resources refers to the power to set and adjust the price of mineral resources possessed by the owner or authorized user of the mineral resources. Such resources, because of their favorable geographical location, low mining difficulty, abundant production and strong market demand, usually have a high market value and price, and play an important role in the development of the local economy.

At present, the pricing right of advantageous mineral resources has become one of the hot spots in the research field. Numerous scholars have explored this in depth from different dimensions. In one such example (Xiao 2022), the researchers constructed a comprehensive

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optimization model of mineral resources pricing by comprehensively analyzing factors such as resource development cost, market supply and demand, and government regulation, and elaborated on the influence mechanism of these factors on pricing. Reference (Kick 2022) discusses the correlation between mineral resource tax policy and resource pricing from the perspective of taxation, emphasizing the important position of taxation in resource pricing. Reference (Cicchetti 2022) advocates that the government should establish a reasonable pricing mechanism, scientifically guide the flow of funds, improve the efficiency of resource development, and realize the sustainable use of resources.

In recent years, legal economics, as an emerging research method, has provided a new perspective for the study of the pricing rights of advantageous mineral resources. Combined with the policy provisions and laws and regulations on resource management, legal economics analyzes in-depth the allocation of mineral resource development rights and pricing rights, and evaluates the far-reaching impact of legal systems and policies on resource development and pricing. At the same time, given that resource pricing is based on market supply and demand, and is realized through market mechanisms such as property rights trading and bidding, legal economics is also committed to exploring the optimization path of the market mechanism in order to enhance the efficiency and fairness of resource pricing.

Path dependence theory also plays an important role in the study of dominant mineral resource pricing power. Path dependence refers to the far-reaching impact of historical institutional arrangements and rule-making on current decision-making. In the field of dominant mineral resources, previous policies and institutional arrangements often determine subsequent resource development and pricing strategies. To a certain extent, this path dependence phenomenon limits the room for adjustment and flexibility with regard to the pricing power of dominant mineral resources.

In order to effectively adjust the pricing power of advantageous mineral resources, a series of strategies need to be adopted. Among these, the formulation of industry self-regulation rules and the optimization of the resource management system are two key tools. The formulation of industry self-regulation rules can effectively enhance market competitiveness and promote the optimal allocation of mineral resources. At the same time, optimizing the resource management system also requires the active participation and effective supervision of the government, including the establishment of a transparent resource flow mechanism and the strengthening of the exploration and management of mineral resources.

In addition to the above, based on the multi-agent theory, reference (Yang 2018) deeply analyzed the surplus value of mineral resources and the gaming behaviors of each participant under different tax rates, technological progress rates, and resource exploitation rates, providing theoretical support for the balance between the economic utilization of resources and the tax system. Reference (Zhang and Feng 2017), on the other hand, based on China's mineral resource tax policy, explored the process and practice of resource tax reform, analyzed the legal issues in the implementation of resource tax policy, and provided the

legal basis and economic support for the reform of the resource tax system. These research projects not only enrich the theoretical system of the pricing right of advantageous mineral resources but also provide useful references for the formulation and implementation of actual policies.

To summarize, the study of the pricing right of advantageous mineral resources involves many fields such as law, economics and resource management, and requires the comprehensive application of various research methods and theoretical frameworks. Through in-depth analysis of various factors affecting the pricing right, the formulation of scientific and reasonable adjustment strategies, the formulation of industry self-regulation rules and the optimization of resource management system, the relevant issues can be gradually improved.

1. Existing literature study

Advantageous mineral resource pricing power is the power of the owner or manager of mineral resources to determine the price of mineral resources. The exercise of mineral resource pricing rights directly affects the extraction, sale and utilization of mineral resources. Therefore, the rational exercise and management of mineral resource pricing right is crucial to mineral resource management and development. In the process of exercising the right to price mineral resources, it is necessary to take into account the impact of geological conditions, market supply and demand, policies and regulations, production costs, tax policies, the competitive environment, the property rights system and other factors in order to formulate a reasonable pricing policy and system and realize the effective management and utilization of mineral resources.

Pricing power is an important power in the extraction of mineral resources and is usually held by the government or the owner. As the owner or authorized user of a dominant mineral resource, the possession of pricing power can bring benefits and give an advantage in market competition. Protecting the pricing power of dominant mineral resources is not an easy task; therefore, power often involves complex interests and competitive conflicts. Governments need to balance the utilization and protection of resources to avoid the social and economic risks associated with the over-exploitation and abuse of pricing power. It also needs to establish a rational enforcement mechanism and regulatory system to ensure the fairness and transparency of resource pricing. The right to price advantageous mineral resources is of great significance to resource owners and socio-economic development, but it must be performed on the basis of considerations of fairness, reasonableness and sustainability. From the government's perspective, the right to price advantageous mineral resources is an important management function, and is the basis for ensuring the rational and orderly development and utilization of resources. The pricing right of advantageous mineral resources is an important management function, and the government needs to realize the multiple goals of rational utilization of resources,

maintenance of market order, promotion of local economic development, and increase of national financial income through the formulation and implementation of relevant policies and regulations. The government can regulate the exercise of mineral resource pricing rights through the formulation of relevant policies and regulations to achieve the following objectives:

1. Ensuring the sustainable utilization of resources: the Government needs to set reasonable pricing standards for mineral resources to guide resource developers to rationally develop resources, avoid abuse and waste of resources, and ensure the long-term sustainable utilization of resources.
2. Maintaining market order and fair competition: the Government needs to regulate the mineral resources trading market, prevent monopolization and unfair competition, ensure market order and fair competition, and maintain the stability and rationality of resource pricing.
3. Promoting local economic development: the government can provide policy guidance in the upstream and downstream of the advantageous mineral resources industry chain, support the technological progress and output growth of the mineral resources industry, promote local economic development, and improve the quality of life of residents.
4. Increase in state revenue: the Government receives a certain amount of tax and other forms of revenue through the pricing of mineral resources, which provides economic support to the state's finances.

From an economic point of view, the right to price advantageous mineral resources is an important market function, providing market-oriented price signals for the development and utilization of resources and guiding the balance between resource supply and demand. Advantageous mineral resources pricing right is the product of the market mechanism, pricing has the function of guiding the supply and demand of resources, optimizing the allocation of resources and balancing the relationship of interests. The stability and rationality of resource pricing affects the development and utilization efficiency of mineral resources and social and economic benefits. From an economic perspective, the pricing right of superior mineral resources has the following main features:

1. Market adjustment mechanism: resource pricing is determined by market supply and demand, which determines the stability and volatility of mineral resource prices.
2. Value decision-making mechanism: pricing is of great significance to the formation and evaluation of the value of resources, as the level of resource pricing will affect the development and utilization of mineral resources.
3. Mechanism for optimal allocation of resources: resource pricing guides the flow of resources to the most efficient areas, realizes the optimal allocation of resources and improves the efficiency of development and utilization.
4. Balance of interest mechanism: resource pricing needs to consider the fair distribution of resource development and stakeholders in order to balance the relationship between resource development and utilization and social interests.

Legal economics is a cross-discipline combining law and economics, studying the impact of the legal system on economic behavior and the impact of economic theory on the legal system. Resource pricing is an important research field of legal economics, which mainly studies how to price resources through the legal system, market mechanism and economic policy, and plays a guiding and regulating role in the development, utilization and protection of resources. In the process of resource pricing, it is necessary to consider the impact of market supply and demand, resource scarcity, environmental costs, social benefits, fairness and other factors, in order to maximize the protection of the public interest of resources and safeguard the legitimate rights and interests of resource developers. Therefore, the study of resource pricing has important theoretical and practical significance in law and economics. Advantageous mineral resource pricing in law and economics is to study how to price mineral resources through law and market mechanism to realize the rational development and protection of mineral resources. In the pricing of mineral resources, the law and the market mechanism interact with each other. The legal system can regulate market behavior and protect the public interest of resources, and the market mechanism can reflect the supply and demand of resources and guide the development and utilization of resources. In the pricing of advantageous mineral resources, it is necessary to consider the impact of scarcity, environmental costs, fairness and other factors in order to develop a reasonable pricing policy and system so that the development and utilization of mineral resources can meet the needs of economic development, and also to ensure the sustainable use of resources and protection of the ecological environment. Therefore, the pricing of advantageous mineral resources is an important field of study in law and economics, and is of great theoretical and practical significance in promoting the rational development and protection of resources.

This paper will analyze the path dependence of the pricing right of advantageous mineral resources from the perspective of jurisprudence and economics, analyze the relevant influencing factors, and analyze the influencing factors of the pricing right of advantageous mineral resources based on economics from both macro and micro perspectives. The structural equation model is then constructed to empirically analyze the analysis of this paper, analyze its influence path, and on this basis, put forward relevant adjustment strategies to provide reference for China's advantageous mineral resources to grasp the international pricing right and perform reasonable pricing.

2. Analysis of factors influencing the pricing power of dominant mineral resources

In studies based on legal and economic perspectives, the factors influencing the pricing power of superior mineral resources are a complex and critical issue. These influencing factors are mainly reflected in various aspects, such as law, the economy and system; further information on this is as follows.

2.1. Legal factors

In the literature in the field of economics, there have been studies that have examined the impact of legal factors on the pricing power of dominant mineral resources. Early research by Stiglitz and Grossman (1981) showed that the legal framework provides legal protection and regulation for resource pricing. They argued that a stable, transparent and effectively enforced legal environment helps to attract investment and increase the effectiveness of resource pricing power. Such a legal framework can be realized through the establishment of rules on resource ownership, conditions of use and the protection of rights. Subsequently, Besley and Burgess (2004) found that legal stability and transparency have a significant impact on investor confidence and decision-making. They noted that a clear and predictable legal system helps to reduce investment risk and encourages investors to invest for the long term. In contrast, legal uncertainty and opacity can discourage investment by causing investors to worry about the uncertainty of resource pricing power. Recently, Keefer and Knack (2018) showed that the enforcement and effectiveness of laws have a direct impact on the exercise of resource pricing power. They found that an effective legal system protects contractual rights, upholds property rights, and resolves disputes, thereby supporting the stability and reliability of resource pricing power. On the one hand, the effectiveness of the exercise of resource pricing power may be weakened if the law is poorly enforced or subject to corruption. On the other hand, a mandatory legal regime can strengthen the enforcement and protection of resource pricing rights. In terms of specific legal rules, contract law is considered to play a crucial role in the realization and protection of resource pricing rights. Acemoglu et al. (2005) found that a well-developed contract law can facilitate the negotiation and enforcement of resource pricing by providing clear contractual terms and liability for breach of contract. In addition, the civil compensation system is also regarded as one of the important legal rules affecting the right to resource pricing. Shleifer and Vishny (1997) found that a well-developed civil compensation system can provide an effective remedial mechanism for resource pricing disputes and torts, thus enhancing the protection of the right to resource pricing.

In summary, legal factors play an important role in influencing the pricing power of superior mineral resources. The legal framework provides legal security and regulation for resource pricing, and its stability and transparency have a significant impact on investor confidence and decision-making. The enforcement and effectiveness of laws directly affect the exercise of resource pricing power. Legal rules such as contract law and civil compensation systems play a crucial role in the realization and protection of resource pricing rights. These research results emphasize the importance of establishing a sound legal environment to support the pricing right of superior mineral resources and provide a reference basis for the government and relevant stakeholders to formulate corresponding legal policies.

2.2. Economic factors

Economic factors also have an impact on the right to price resources, and economic factors such as market supply and demand, price volatility and competitive conditions directly affect the exercise of the right to price resources. An example of this is the fact that in a situation of tight supply and demand, resource owners are often able to obtain greater benefits by increasing the price of resources. In addition, market competition will also affect the exercise of resource pricing power. In a competitive market environment, resource owners need to be more flexible in adjusting prices to remain competitive. According to Marshall's (1890) theory of supply and demand, market supply and demand is one of the main factors determining prices and resource allocation. When resources are in short supply, resource owners can usually benefit more by raising the price of resources. This theory suggests that in a market environment where supply and demand are tight, resource owners will have greater resource pricing power. In addition, Knight's (1921) uncertainty theory suggests that price volatility also has a significant impact on the exercise of resource pricing power. Price volatility may arise from changes in market demand, production costs, and other factors that directly affect resource prices and pricing power. Resource owners need the flexibility to adjust resource prices to market conditions in order to adapt to the changing economic environment. Porter's (1980) Five Forces Model presents the impact of market competition on resource pricing power. He argued that the higher the level of market competition, the greater the challenge faced by resource owners in exercising their pricing power. In a highly competitive market environment, resource owners need to be flexible in adjusting their prices to provide more competitive products or services in order to maintain a competitive advantage. There are also some theoretical frameworks in economics related to resource pricing power. One such example is that Harrod's (1939) theory of investment acceleration states that investment has a direct impact on the demand for resources and a significant impact on resource pricing power. When investment increases, the demand for resources also increases, leading to a corresponding increase in resource pricing power.

In summary, economic factors play an important role in the exercise of resource pricing power. Economic factors such as market supply and demand, price volatility and competitive conditions will directly affect the exercise of resource pricing power. In a situation of tight supply and demand, resource owners can gain greater benefits by increasing the price of resources. At the same time, price volatility and market competition can lead to changes in resource pricing power. These economic factors reflect changes in the market environment and fluctuations in the demand for resources, which have a significant impact on resource pricing power. Theoretical frameworks in the economics literature can help us better understand and explain the impact of economic factors on resource pricing power.

2.3. Institutional factors

Institutional factors are also one of the key factors affecting resource pricing power. Institutions include factors such as government actions, regulatory bodies and organizational rules. Government policies and regulations play a guiding and restraining role in the exercise of resource pricing power. The government can influence the exercise of resource pricing power by setting price ceilings, implementing subsidy policies and by other means. Regulators play a supervisory and regulatory role in the resource pricing process to ensure fair competition and consumer rights. Organizational rules can also have an impact on the allocation and exercise of resource pricing power, such as the internal rules and procedures of cooperative organizations. First, government policies and regulations play a guiding and restraining role on the exercise of resource pricing power (North 1990). The government influences the exercise of resource pricing power by setting price ceilings and implementing subsidy policies. The government's policy decision-making process and the regulations it enacts have a significant impact on the exercise of resource pricing power. In addition, regulators play a supervisory and regulatory role in the resource pricing process (Joskow 1975) and their role is to safeguard fair competition and consumer rights. Regulators oversee the exercise of resource pricing power by resource owners and coordinate between stakeholders by establishing relevant rules and procedures. In addition, organizational rules also influence the allocation and exercise of resource pricing power (Alchian and Demsetz 1972). Within cooperative organizations, internal rules and procedures govern the exercise of resource pricing power by members. These rules may include the allocation of authority over resource utilization, price decision-making procedures, etc. The existence of organizational rules helps to ensure the transparency, fairness and effectiveness of the resource pricing process. North (2021) states that institutional change has a significant impact on resource pricing power. As social and economic conditions change, institutions may need to be adapted and changed to meet new needs and challenges. Williamson (2020) presents a new institutional economics perspective that emphasizes the impact of institutional factors on resource pricing power. He argues that factors such as institutional arrangements, contractual terms, and ownership allocation affect the exercise of resource pricing power. Kostal (2014) explores the impact of legal institutions on resource pricing power in his study of legal economics. He analyzes the relationship between legal rules and economic efficiency, emphasizing the role of law as providing a stable framework to ensure the exercise of resource pricing power.

In summary, institutional factors have a significant impact on resource pricing power. Government policies and regulations, regulatory agencies and organizational rules all play a crucial role in the exercise of resource pricing power. The economics literature provides a theoretical framework to help us study and understand the impact of institutional factors on resource pricing power in depth. The rational design and improvement of these institutional factors can promote equity, efficiency and sustainability in resource pricing. In addition, research in legal economics has emphasized the role of the legal system

in protecting resource pricing rights. Theoretical research and the practical application of resource pricing rights can help optimize resource allocation and promote economic development.

2.4. Social and cultural factors

In addition to the above, social and cultural factors also influence the exercise of the right to price resources to a certain extent. People from different countries, regions and cultural backgrounds have different perceptions and attitudes towards the right to price resources. Factors such as cultural traditions and values affect people's expectations and behaviors towards resource pricing. An example is that in some cultures, resources are regarded as public property, and their pricing should take into account social equity and maximization of benefits; while in other cultures, resources are regarded as private property, and their prices should be freely determined by the market. Cross-cultural research by Hofstede (1980) has shown that people in different cultures have different preferences for individualism and collectivism. In collectivist cultures, people are more concerned with social justice and maximizing benefits and believe that resources should be priced with social welfare and public interest in mind, while in individualist cultures, people are more inclined to believe that resource pricing should be freely determined by the market. Another related concept is cultural modernization theory (Inglehart and Welzel 2005). The theory states that during the modernization of a society, cultural values also change. As societies modernize, individualistic and market-oriented values gradually replace traditional notions of collectivism, which has implications for the exercise of resource pricing power. It has also been found that people from different cultures may have different perceptions and attitudes towards resource pricing power. Triandis (1995) proposed the cultural dimensions of individualism and collectivism. Individualistic cultures emphasize individual autonomy, competition and self-actualization, while collectivistic cultures emphasize teamwork, social relationships and group interests. These cultural dimensions may have different understanding and approaches to the exercise of resource pricing power.

In summary, socio-cultural factors influence the exercise of resource pricing power to a certain extent, and these socio-cultural factors are of great significance to the study and practice of resource pricing power and should be taken into account in resource pricing decisions. The economics literature and cross-cultural studies provide an important theoretical framework and empirical evidence for understanding the impact of sociocultural factors on resource pricing power.

3. Construction of the path dependence model for the influence of the pricing power of superior mineral resources

3.1. Determination of indicators

Based on the previous analysis, this article selects relevant indicators that affect the pricing power of advantageous mineral resources from both macro and micro perspectives. From a macro perspective, it mainly considers national policies and laws and regulations, international market conditions, gross domestic product, environmental protection requirements and costs, resource reserves and mining technology. These indicators can be empirically studied through policy documents, international market price index, GDP growth rate, environmental protection input and cost data, resource reserves, mining technology level and other data. From a micro perspective, it mainly considers the relationship between resource supply and demand, the quality and output of mineral resources, resource reserves and mining costs and the degree of market competition. These indicators can be empirically studied through methods such as market research, resource research, cost analysis and competitiveness evaluation. A three-level indicator model is used to determine relevant indicators, and the final indicator system is shown in Table 1.

This article will construct a structural equation path model based on the above indicators to observe how various factors affect the pricing power of advantageous mineral resources from both macro and micro perspectives, and to analyze their impact paths.

Table 1. Empirical indicator system

Tabela 1. System wskaźników empirycznych

Target layer	Secondary indicator layer	Third level indicator layer	Measurement methods and data sources
Significance of the pricing power impact on advantageous mineral resources (SIPP)	Macro factors MAF	Policy Support Level (PSI)	Proportion of total government investment
		Gross Domestic Product (GDP)	GDP
		International market share (IMS)	International market share
		Environmental Cost (EC)	Proportion of environmental protection investment
	Micro factor MIF	Supply-demand relationship index (SDRI)	Supply/demand × 100%
		Resource Quality Index (RQI) Mining Cost Index (MCI)	Market quality rating
			Proportion of mining costs
		Market Competition Level (MCL)	Proportion of market profit per ton

3.2. Construction of structural equation model

According to the above analysis model, in the process of analysis, this paper uses a structural equation model to perform significance analysis on the relationship and role of various indicators. Structural equation is a very general linear statistical modeling technology, which is based on analysis of covariance of variables to study the relationship between variables, and is generally described by measurement equations and structural equations.

1) Construction of Structural Equation Model

In the construction of structural equation models, the path analysis method is usually used for modeling. This method was proposed by geneticist Sweall Wright, and the path map developed thereafter is more convenient and intuitive to express the meaning of the model. As shown in Table 2, the path map uses icons and arrows to represent variable relationships. The theoretical model charts used in this article are combined with the structural equation analysis method, and the model is represented by graphs. The meanings of the icons in each graph are as follows:

Table 2. Definition of icon meaning for structural equation model theoretical. Model diagram

Tabela 2. Definicja znaczenia ikony dla teoretycznego modelu równań konstrukcyjnych. Schemat modelu

Icon	Meaning
	Indicates observation variables
	Indicates potential variables
	Indicates error variables
	Indicates a one-way causality

Based on the definition of the theoretical model graph mentioned above and the indicator selection provided earlier, this article constructs a structural equation model as shown in Figure 1.

Based on the above model and the principle of structural equation theory, the latent variable parameter diagram included in the structural equation of the significant influencing factors of the pricing path dependence of advantageous mineral resources can be obtained, as shown in Figure 2.

Among the above variables, this article introduces exogenous control variables to avoid the influence of relevant factors beyond the variables considered in the entire model. This allows the entire model to conduct relevant empirical data analysis while only focusing on

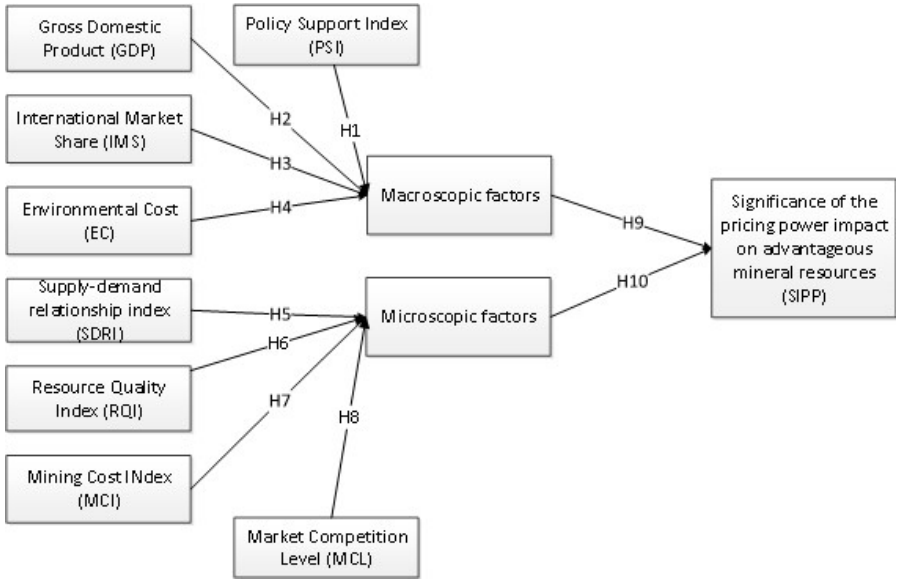

Fig. 1. Structural equation model for the impact of the pricing rights path of dominant mineral resources

Rys. 1. Model równań strukturalnych dla wpływu ścieżki praw cenowych dominujących surowców mineralnych

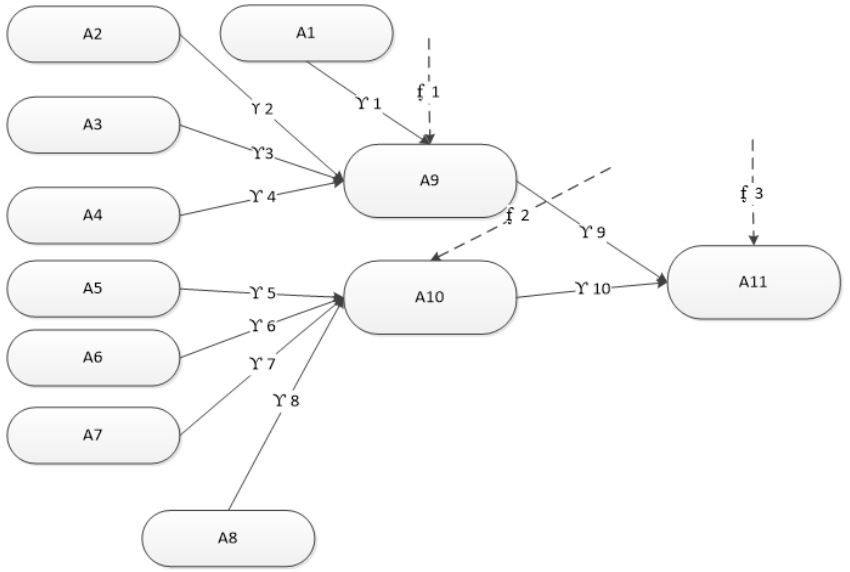

Fig. 2. Significant impact of path dependence on the pricing of dominant mineral resources on potential variables of structural equation

Rys. 2. Znaczący wpływ zależności ścieżki na ceny dominujących surowców mineralnych na potencjalne zmienne równania strukturalnego

the influencing factors of financial reform, and can ensure the accuracy and reliability of the model analysis. The variable definitions of A1-A7 correspond to the indicator variables of the model in Figure 2, so the following mathematical model can be derived to describe the entire structural equation analysis model:

$$A_3 = \gamma_1 A_1 + \gamma_5 A_2 + f_1 \tag{1}$$

$$A_{12} = \gamma_2 A_1 + \gamma_6 A_2 + f_2 \tag{2}$$

$$A_4 = \gamma_3 A_1 + \gamma_7 A_2 + f_3 \tag{3}$$

$$A_5 = \gamma_4 A_1 + \gamma_8 A_2 + f_3 \tag{4}$$

$$A_8 = \gamma_{13} A_1 + \gamma_{14} A_2 + f_6 \tag{5}$$

$$A_6 = \gamma_4 A_1 + \gamma_8 A_2 + f_4 \tag{6}$$

$$A_7 = \gamma_9 A_3 + \gamma_{10} A_4 + \gamma_{11} A_5 + \gamma_{12} A_6 + f_3 \tag{7}$$

3.3. Research hypothesis

For subsequent empirical analysis, this article proposes the following hypotheses based on the above model:

Hypothesis 1: Policy support level (PSI), gross domestic product (GDP), international market share (IMS), and supply-demand relationship index (SDRI) are key factors that affect the pricing power of advantageous mineral resources at the macro level, with significant and positive impacts.

Hypothesis 2: The supply and demand relationship (SDRI), resource quality index (RQI), mining cost index (MCI) and market competition level (MCL) are key factors that affect the pricing power of advantageous mineral resources at the micro level, with significant and positive impacts.

The above is the entire structural equation analysis model constructed during the analysis process of this article. In subsequent empirical studies, based on this model, we will analyze how relevant factors affect the pricing power of advantageous mineral resources from different perspectives, analyze their impact and path, and provide a foundation for further suggestions and countermeasures.

4. Empirical study on the path dependence model of the impact of pricing rights on dominant mineral resources

4.1. Data sources

The data in this article is sourced from the official website of the National Bureau of Statistics. We screened the import and export data related to China's lithium mines and extracted some market data from the report „Analysis of the Current Situation and Development Prospects of China's Lithium Industry" released by Intelligent Research Consulting as the data used in this study. We collected relevant data on China's lithium resources from 2012 to 2022, and generated corresponding execl files. Finally, we imported the generated execl into SPSS22.0 for analysis. If there is a default value, the arithmetic mean value was used to replace the supplement.

4.2. Data reliability analysis

When conducting reliability analysis in this article, reference was made to the analytical method adopted by scholar Giford (1954), who believed that Cronbach's α When the value is between the interval [0.70 1.00], it belongs to high reliability; When α When the value is within [0.35 0.70], it is considered acceptable; When α When the value is [0 0.35], it is considered low reliability. Calculate all latent variables designed in this article α Values greater than 0.35 are commonly believed to be reliable, and most values greater than 0.7 belong to high reliability. At the same time, by combining the CITC value, we can see that the CITC value of each measurement question is above 0.4, and the measurement value of each question is higher than α. The value should be low, so we can believe that the designed questionnaire measurement questions have good reliability. At the same time, before conducting factor analysis, this article conducted KMO (Kaiser. Meyer. Olkin) and Bartlett analyses on various latent variables to test whether the data was suitable for factor analysis. The closer the KMO value is to the surface data, the more suitable it is for factor analysis. From the study, it can be seen that the KMO values of each latent variable are all greater than 0.7, and the significance of the statistical values of the Bartlett's spherical test for each latent variable is. 000. Therefore, the sample data in this article is suitable for factor analysis.

4.3. Descriptive statistical analysis of data

Based on statistical index data, this paper uses SPSS 22.0 software to perform descriptive statistical analysis on each measurement problem of the sample data variable, so as to

understand the minimum, maximum, average and standard deviation of each specific problem in more detail, as shown in Table 3.

Table 3. Descriptive statistical analysis results of data indicators

Tabela 3. Wyniki opisowej analizy statystycznej wskaźników danych

	Sample size	Minimum	Maximum	Mean	Std. deviation
Policy support Index (PSI)	10	1	4	2.13	0.891
Gross Domestic Product(GDP)	10	1	5	2.67	0.978
International market share (IMS)	10	1	4	2.33	0.689
Environmental Cost (EC)	10	1	5	2.78	0.976
Supply-demand relationship index (SDRI)	10	1	5	3.12	1.090
Resource Quality Index (RQI)	10	1	5	3.45	0.977
Mining Cost Index (MCI)	10	1	5	2.18	0.976
Market Competition Level (MCL)	10	1	5	3.12	0.789

4.4. Analysis of path dependence on the pricing power of dominant mineral resources

4.4.1. Model correction

Using the same method as the previous structural equation model analysis, this article uses AMOS17.0 software to statistically analyze the covariance and variance of the financial reform and macroeconomic financial stability related indicators based on the indicator data and calculation results. Based on the data, the model was modified. Finally, correlation statistical analysis of each variable was conducted, and the results shown in Table 4 were obtained. In this table, the non standardized regression coefficients and significance were tested. The Estimate term in the table represents the non-standard regression coefficients, S.E. (standard error) represents the standard error of the estimated parameters, C.R. (criticalratio) is the critical ratio, which is a test statistic. The critical ratio is the t-value of the t-test. If this value is greater than 1.96, it indicates reaching a significance level of 0.05; P is probability, using *** to indicate that the p-value is less than 0.001.

Firstly, the correlation between the dependent variable and latent variable is analyzed, and the results are shown in Table 4.

Table 4. Statistical analysis of variable correlation

Tabela 4. Analiza statystyczna korelacji zmiennych

Variable	Functional relationship	Object of action	Estimate	S. E	C. R	P	Relativity
MAF	←	PSI	0.521	0.088	1.238	***	remarkable
		GDP	0.678	0.117	1.106	***	remarkable
		IMS	0.572	0.101	2.354	***	remarkable
		EC	0.431	0.061	5.134	**	remarkable
MIF	→	SDRI	0.512	0.062	1.932	***	remarkable
		RQI	0.508	0.107	2.113	***	remarkable
		MCI	0.372	0.141	2.351	**	remarkable
		MCL	0.637	0.071	1.138	***	remarkable

From the above empirical results, it can be seen that when constructing the structural equation model, this article proposes Hypothesis 1 based on the statistical analysis of financial stability and the trend of changes over the years mentioned earlier: policy support level PSI, gross domestic product GDP, international market share IMS, supply and demand relationship index SDRI. These are key factors that affect the pricing power of advantageous mineral resources at the macro level, and have a significant and positive impact on it. Hypothesis 2: The supply and demand relationship (SDRI), resource quality index (RQI), mining cost index (MCI), and market competition level (MCL) are key factors that affect the pricing power of advantageous mineral resources at the micro level, with significant and positive impacts. Both hypotheses hold true.

Further analysis was conducted on the significance of the impact between various latent variables and financial stability FS, and the results are shown in Table 5.

Based on the above analysis results, both macro and micro perspectives show significant correlation in the impact on the pricing power of advantageous mineral resources, which is consistent with Hypothesis 1 and Hypothesis 2 mentioned earlier.

Table 5. Significance analysis of the impact of various latent variables on financial stability FS

Tabela 5. Analiza istotności wpływu różnych zmiennych ukrytych na stabilność finansowa FS

Latent variable	Functional relationship		Estimate	S. E	C. R	P	Relativity
MAF index	→	PPI index	0.3762	0.0746	3.4393	***	remarkable
MIF index			0.4026	0.0156	4.0098	***	remarkable

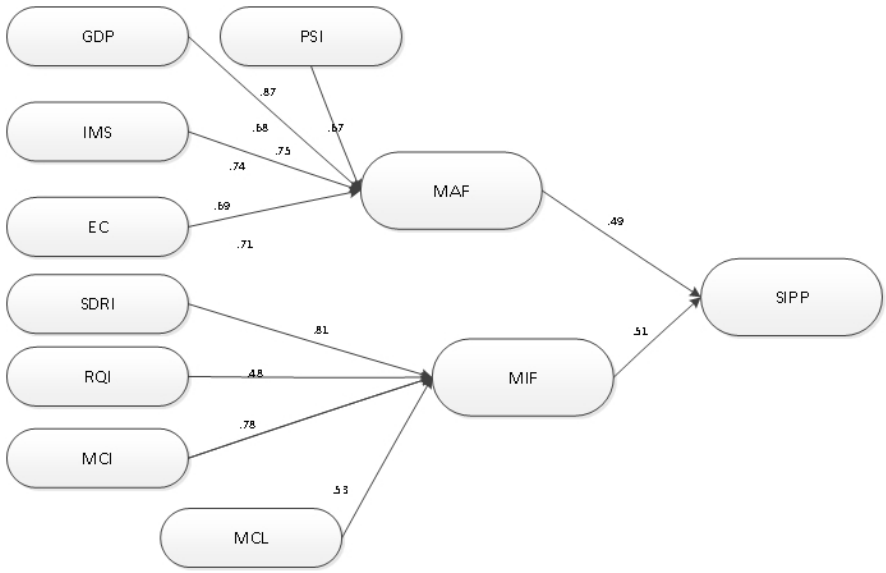

Fig. 3. Revised structural equation measurement model diagram

Rys. 3. Poprawiony schemat modelu pomiaru równań strukturalnych

Finally, based on the influence factor values obtained above, this article further modified the structural equation model, and the modified structural equation model is shown in Figure 3.

4.4.2. Model fit analysis

In order to further evaluate the fit of the theoretical model and actual questionnaire sampling data in this article, we used indicators such as CMIN, DF, GFI, RMSEA, TLI, NFI provided in structural equation modeling theory to analyze and evaluate the fit of this model with actual data. Among them, CMIN is a macro function of differences, which can effectively detect whether the user model is suitable for the data obtained in this study. CMIN/DF can obtain the degree of freedom of the model, and the size of this indicator can determine the suitability of the model and actual data. The closer its value is to 0, the higher the matching degree between the model and actual data, indicating the more suitable it is. Usually, the CMIN/DF values of the designed model are within the range of [0.1.3], indicating that the model is acceptable. Model design errors are not acceptable. The GFI indicator is used to determine the fitness of a model, which is opposite to CMIN/DF. The closer its value is to 1, the higher the degree of model matching and the better the model fitness. In actual evaluation, a model with a GFI greater than 0.9 is selected as suitable. RMSEA refers to the square root of the average square error. RMSEA = Overall difference/degree of freedom.

When RMSEA < 0.05, it indicates good model fit; O. 05 < RMSEA < 0.1 indicates that the model fit is acceptable; when RMSEA > 0.1, it indicates poor model fit. TLI refers to the Tucker Lewis indicator. The value of TLI is between 0 and 1, and the closer the TLI is to 1, the better the fit between the data and the model. NFI refers to a benchmark fitness indicator. The NFI value is also between 0 and 1, and the larger the NFI value, the better the fit between the model and the data. The above indicators of the modified model in this article are shown in Table 6. From the table, it can be seen that the fitting effect of the model in this article is good.

Table 6. Analysis results of fitting indicators

Tabela 6. Wyniki analizy wskaźników dopasowania

CMIN	CMIN/DF	GFI	TLI	RMSEA	NFI
531.127	1.891	0.897	0.881	0.078	0.867
–	Between 1 and 3	Approaching 0.9	Approaching 0.9	Between 0.05 and 0.08	–

4.5. Empirical conclusion of the model

Based on the theoretical analysis and empirical results in this paper, we find that macro factors such as policy support (PSI), economic development level (GDP), international market share (IMS), and supply and demand index (SDRI) are the key factors affecting the pricing power of advantageous mineral resources, and show a positive influence. Micro factors such as Supply and Demand Relationship Index (SDRI), Resource Quality Index (RQI), Mining Cost Index (MCI), and Market Competition Index (MCL) are also key factors affecting the pricing power of advantageous mineral resources and show a positive influence. Based on the above results, we can summarize the three major advantages of China's advantageous mineral resources pricing power compared with developed countries in Europe and the United States as follows:

1. Policy support: government policies and laws and regulations have a decisive impact on the pricing power of advantageous mineral resources. By formulating and implementing relevant laws and policies, the government can regulate supply and demand, the degree of competition, environmental requirements, cost management and other factors to ensure the rational development and utilization of resources.
2. Resource quality and production: micro-factors such as the Resource Quality Index (RQI) and production also play an important role in the pricing power of superior mineral resources. High-quality and large-scale mineral resources can enhance China's bargaining power in the international market, thus influencing resource pricing.

3. International market share: increased international market share is also one of the advantages of pricing China's superior mineral resources. When China has a large share of the international market, it has strong bargaining power and can influence market prices by controlling supply.

Overall, compared with developed countries in Europe and the United States, China's mineral resource pricing advantages mainly include policy support, resource quality and production, and international market share. Through a reasonable legal and policy framework, giving full play to its resource advantages and combining them with market demand, China can further increase its pricing power in mineral resources and realize sustainable resource development and socio-economic growth.

5. Strategies and suggestions for adjusting the pricing power of superior mineral resources

Based on the perspective of law and economics, this paper discusses in depth the path dependence of the pricing right of advantageous mineral resources and puts forward the following strategies and suggestions to optimize the allocation of its pricing right:

1) Improvement of system construction and strengthening of system innovation

Emphasis on institutional innovation is the key to realizing the rational allocation of resource pricing power. In terms of the adjustment of laws and regulations, firstly, strengthening the independence and impartiality of the regulatory body is the key to ensuring that the decision-making process of resource pricing rights is transparent, open and fair. Undue influence and manipulation can be prevented through the establishment of independent regulatory bodies and the reduction of the direct control of resource pricing rights by the government, specific enterprises or special interest groups. These regulatory bodies should have sufficient authority and expertise to effectively fulfill their regulatory responsibilities, and they should require high transparency and clear accounts and be subject to social supervision. Secondly, encouraging market competition is an important means to promote the decentralization of resource pricing. Reducing government monopolization and administrative intervention creates opportunities for other enterprises to participate fairly in resource pricing power. By relaxing market access restrictions and lowering industry thresholds, more competitors can be attracted to enter the market and the decentralized transfer of resource pricing power to market players can be promoted. In addition, measures can be taken to improve information transparency and provide true, accurate and complete information so that market players can better understand the decision-making basis and process of resource pricing rights. This can be achieved through measures such as establishing an information-sharing platform, improving the data disclosure system and enhancing information disclosure. Adequate and transparent information can help enhance the trust of market participants, promote reasonable competition, and effectively decentralize resource pricing power. In addition, it is necessary to focus on the continuous adjustment and improvement of laws

and regulations. Timely tracking of market changes and technological progress, revising and updating relevant laws and regulations to ensure that they meet the needs of resource pricing power allocation. The legal framework should clearly define the boundaries and scope of resource pricing power and provide corresponding regulatory measures. In addition, strict enforcement should be conducted to crack down on price manipulation, monopolization and unfair competition, so as to safeguard fair competition in the market and the rational allocation of resource pricing power. Therefore, to realize the rational allocation of resource pricing power, emphasis should be placed on institutional innovation. Strengthening the construction of independent regulatory bodies, encouraging market competition, improving information transparency, and continuously adjusting and improving laws and regulations are important strategies to promote the rational allocation of resource pricing power. These measures will help realize the fair, effective and sustainable development of resource pricing power.

2) Establishment of sound market mechanisms to promote market competition

The establishment of a sound market mechanism is the key to realizing the rational allocation of resource pricing power. First, promoting the liberalization of market access is a necessary step towards creating a level playing field. Lowering the market access threshold and simplifying the approval process will provide more opportunities for enterprises to enter the market. This will promote fair and fierce competition among competitors, thereby promoting the decentralization of resource pricing power to more enterprises. Second, lowering the market access threshold requires advocating fair and transparent market competition. By formulating and implementing anti-monopoly laws and regulations, we will combat market manipulation, the abuse of dominant market position and unfair competition, and maintain a fair competition environment in the market. This will prevent resource pricing power from being monopolized by a small number of large enterprises or interest groups, and ensure that other enterprises are able to participate fairly in resource extraction and pricing. In addition, strengthening market supervision is also an important part of establishing and improving the market mechanism. Strengthening regulation and law enforcement of market players, timely detection and punishment of market manipulation and monopolization. Regulators should have sufficient authority and expertise to effectively fulfill their regulatory responsibilities and ensure the rational allocation of resource pricing power. At the same time, the transparency and sharing of market information should be enhanced. An information platform and data-sharing mechanism should be established to provide true, accurate and complete market information, so that market players can better understand the market supply and demand situation, the price formation mechanism and the competitive situation. Fully transparent information helps to enhance the trust of market participants, promote reasonable competition and effectively decentralize resource pricing power. And in the adjustment, attention should be paid to the formulation and optimization of public policies. Through the formulation and implementation of policies conducive to the rational allocation of resource pricing power, enterprise innovation and technological progress should be encouraged, and the diversity and competitiveness of market players should be increased. Public policies should be orient-

ed towards market efficiency, fair competition and sustainable development to ensure that the allocation of resource pricing rights is in line with social welfare and public interest. In short, the establishment of a sound market mechanism is the key to realizing the rational allocation of resource pricing power. Promoting market access liberalization, reducing market access barriers, combating market manipulation and monopolistic practices, strengthening market regulation and information transparency, and formulating public policies conducive to the rational allocation of resource pricing power will help to achieve fair, efficient and sustainable development of resource pricing power.

3) Strengthening legal protection and establishing a sound legal framework

To ensure the rational allocation of resource pricing rights, it is crucial to establish a sound legal framework and strengthen the legal protection of resource pricing rights. First of all, it is necessary to ensure the integrity and effectiveness of property rights law and to clarify and protect resource property rights, so that all market players have clear rights and interests in the allocation of resource pricing rights. This includes ensuring the legality and effectiveness of property rights circulation and transactions, providing convenient property rights registration and protection mechanisms, and preventing the illegal appropriation or infringement of resource pricing rights. Second, upholding the enforcement and fulfillment of contracts is an important legal protection measure. Emphasizing the spirit of contract ensures that all parties fulfill their obligations in accordance with their contracts, including those related to resource pricing rights. Effective contract enforcement mechanisms will induce market participants to abide by their agreements and reduce contractual disputes and undue infringements on resource pricing rights. In addition, price fixing, monopolization and unfair competition should be vigorously combated. By enacting anti-monopoly laws and regulations, unfair competition behaviors such as price manipulation and abuse of dominant market position should be combated to maintain market order and a fair competition environment. Regulatory authorities should strengthen supervision and the law enforcement of market players, and promptly detect, investigate and deal with illegal acts. In addition, legal remedy mechanisms should be strengthened to provide effective remedies for market players whose resource pricing rights have been infringed upon. A fast, fair and efficient dispute resolution mechanism, including arbitration and litigation, should be established to safeguard the legitimate rights and interests of market players. At the same time, other measures should be introduced such as increasing the punishment for intentional infringement to act as a deterrent and reduce the occurrence of illegal behavior and strengthening international legal coordination and cooperation. Through the mechanism of international legal cooperation, share experiences, adjust differences and jointly solve the problem of cross-border resource pricing rights. Promoting the consistency and coordination of international legal rules will help establish a more stable and predictable international resource market order. In summary, to ensure the rational allocation of resource pricing rights, it is necessary to establish a sound legal framework and strengthen the legal protection of resource pricing rights. This includes ensuring the integrity and effectiveness of property rights laws, upholding the enforcement and performance of contracts, stepping up efforts to combat price

manipulation, monopolization and unfair competition, and strengthening international legal coordination and cooperation. These measures will help to maintain market order, protect the rights and interests of market players and promote the equitable distribution of resource pricing rights and sustainable development.

4) Promote social and cultural transformation, emphasizing socio-cultural impacts

Promoting socio-cultural transformation is an important way to realize the equitable distribution of resource pricing power. To this end, the following measures can be taken to emphasize the influence of social culture and promote the transformation of social attitudes. First, through publicity and education, strengthen the cultivation and popularization of values such as fairness, transparency and cooperation. Focusing on value guidance in school education and social education, educate people to follow the principle of fairness, fully recognize the importance of the right to price resources and understand the negative impact of unfair distribution on social stability and sustainable development. At the same time, through the power of the propaganda media, the message of fair distribution of resource pricing rights is conveyed to the public to raise the awareness of society as a whole of the importance of resource pricing rights. Secondly, encourage all sectors of society to participate in and monitor the process of allocating resource pricing rights. Actively promote the participation of the public, professional institutions, non-governmental organizations and other parties in the decision-making and supervision of resource pricing rights. A consultation mechanism should be set up for extensive discussion and consultation, in order that more people have the opportunity to participate in the decision-making process of resource pricing rights, and the voices and opinions of all parties should be provided for the allocation of resource pricing rights. In this way, the transparency and fairness of resource pricing rights can be improved. In addition, a social monitoring mechanism should be established to strengthen the monitoring and evaluation of the allocation of resource pricing rights. Independent regulatory bodies or committees should be established to oversee the decision-making and implementation process of resource pricing rights to ensure their fairness, transparency and reasonableness. These bodies can receive complaints and reports from the public, and investigate and handle them. At the same time, reporting channels and information protection measures are provided to encourage the public to participate in the supervision of resource pricing rights and to reduce the occurrence of misconduct. Finally, emphasize the democratic and participatory nature of resource pricing power allocation. This advocates the establishment and improvement of a multi-party decision-making mechanism, so that market players, the government, non-governmental organizations, professional bodies and others have the opportunity to participate in the decision-making process and ensure that their voices are fully heard and taken into account. Emphasizing democratic decision-making and openness in the decision-making process will help enhance the trust and recognition of all parties in the right to price resources. In conclusion, promoting socio-cultural transformation is key to realizing the equitable distribution of resource pricing rights. Through publicity and education, we will cultivate the values of fairness, transparency and cooperation and encourage the participation and supervision of all sectors of society

to promote a more democratic, open and participatory allocation of resource pricing rights. These measures will help to raise the awareness and importance of society as a whole of the fair allocation of resource pricing rights, and promote the realization of fair, transparent and sustainable development of resource pricing rights.

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THE PATH DEPENDENCE AND ADJUSTMENT STRATEGY OF THE PRICING POWER OF DOMINANT MINERAL RESOURCES: BASED ON THE PERSPECTIVE OF LAW AND ECONOMICS

Keywords

resource pricing, pricing power, advantageous mineral resources, GDP, structural equation

Abstract

This paper systematically analyzes the relevant influencing factors of the pricing power of advantageous mineral resources from the perspective of law and economics. It discusses the key factors that affect the pricing power of advantageous mineral resources in China from both macro and micro perspectives. And empirical analysis was conducted based on the structural equation model, using China's lithium resources as an example to analyze the lithium related market data from 2012 to 2022 for the period of 10 years. The empirical results showed that policy support level PSI, gross domestic product GDP, international market share IMS, and supply and demand relationship index SDRI are key factors that affect the pricing power of advantageous mineral resources at the macro level, and have a significant impact on them, And it presents a positive impact. The supply and demand relationship SDRI, resource quality index RQI, mining cost index MCI, and market competition level MCL index are key factors that affect the pricing power of advantageous mineral resources at the micro level, and have a significant and positive impact on them. Moreover, macro influencing factors are

greater than micro factors, which interact with each other and achieve reasonable development and utilization of resources through policy regulation, market mechanisms, and technological innovation, thereby affecting the pricing power of mineral resources. Therefore, in actual regulation, it is necessary to comprehensively consider multiple factors, adopt various means and strategies to improve the pricing power of mineral resources, ensure the sustainable development of resources and the sustained growth of the social economy.

ŚCIEŻKA ZALEŻNOŚCI I STRATEGIA DOSTOSOWANIA SIŁY CENOWEJ DOMINUJĄCYCH SUROWCÓW MINERALNYCH – NA PODSTAWIE PERSPEKTYWY PRAWNEJ I EKONOMII

Słowa kluczowe

wycena zasobów, siła cenowa, użyteczne surowce mineralne, PKB, równanie strukturalne

Streszczenie

W artykule systematycznie analizowano istotne czynniki wpływające na siłę cenową użytecznych surowców mineralnych z punktu widzenia prawa i ekonomii. Omówiono w nim kluczowe czynniki wpływające na siłę cenową użytecznych surowców mineralnych w Chinach, zarówno z perspektywy makro, jak i mikro. Analizę empiryczną przeprowadzono w oparciu o model równań strukturalnych, wykorzystując chińskie zasoby litu jako przykład do analizy danych rynkowych związanych z litem w latach 2012–2022 przez okres 10 lat. Wyniki empiryczne wykazały, że poziom wsparcia politycznego PSI, produkt krajowy brutto PKB, udział w rynku międzynarodowym IMS oraz wskaźnik relacji podaży i popytu SDRI to kluczowe czynniki wpływające na siłę cenową użytecznych surowców mineralnych na poziomie makro i mają na nie znaczący pozytywny wpływ. Relacja podaży i popytu SDRI, wskaźnik jakości zasobów RQI, wskaźnik kosztów wydobycia MCI i wskaźnik poziomu konkurencji rynkowej MCL są kluczowymi czynnikami, które wpływają na siłę cenową użytecznych surowców mineralnych na poziomie mikro i mają na nie znaczący i pozytywny wpływ. Co więcej, czynniki makro mają większy wpływ niż czynniki mikro, które oddziałują na siebie nawzajem i osiągają rozsądny rozwój i wykorzystanie zasobów poprzez regulacje polityczne, mechanizmy rynkowe i innowacje technologiczne, wpływając w ten sposób na siłę cenową surowców mineralnych. W związku z tym w rzeczywistej regulacji konieczne jest kompleksowe uwzględnienie wielu czynników, przyjęcie różnych środków i strategii w celu poprawy siły cenowej surowców mineralnych, zapewnienia zrównoważonego ich pozyskania i trwałego wzrostu gospodarki społecznej.